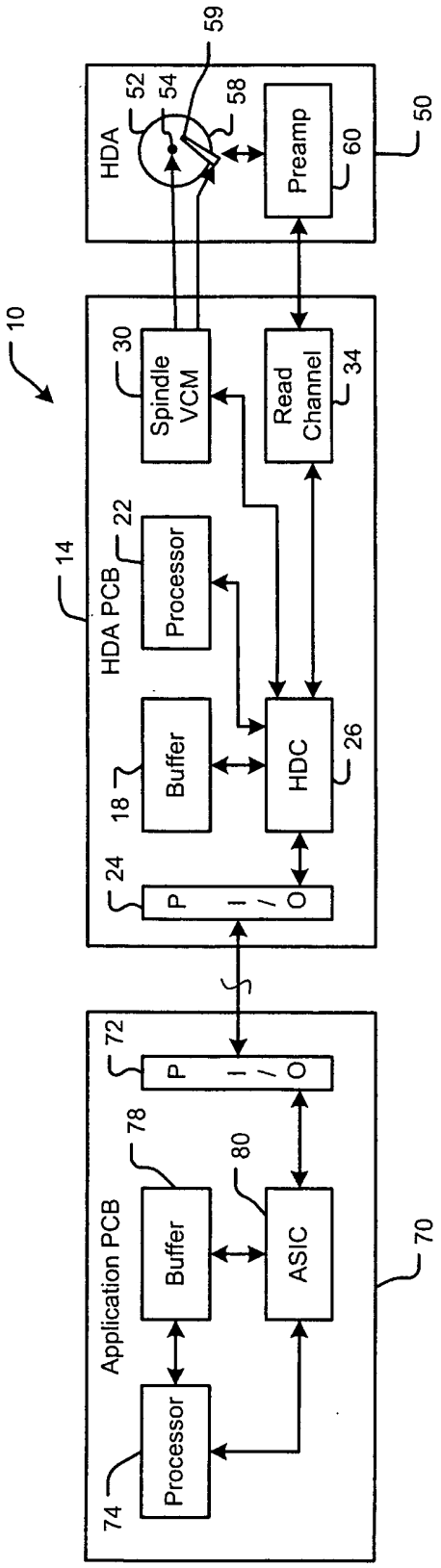


FIG. 1
Prior Art

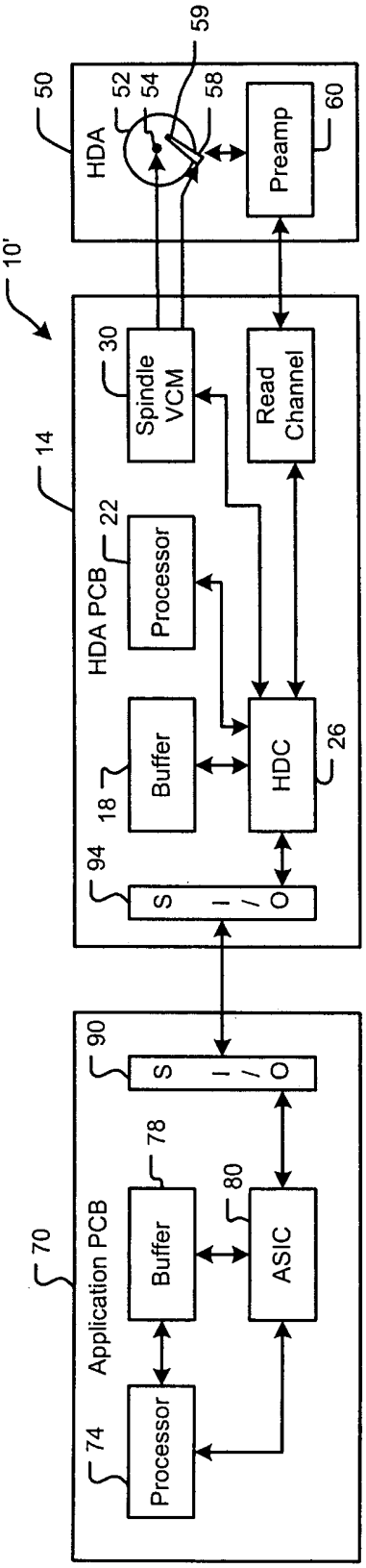


FIG. 2
Prior Art

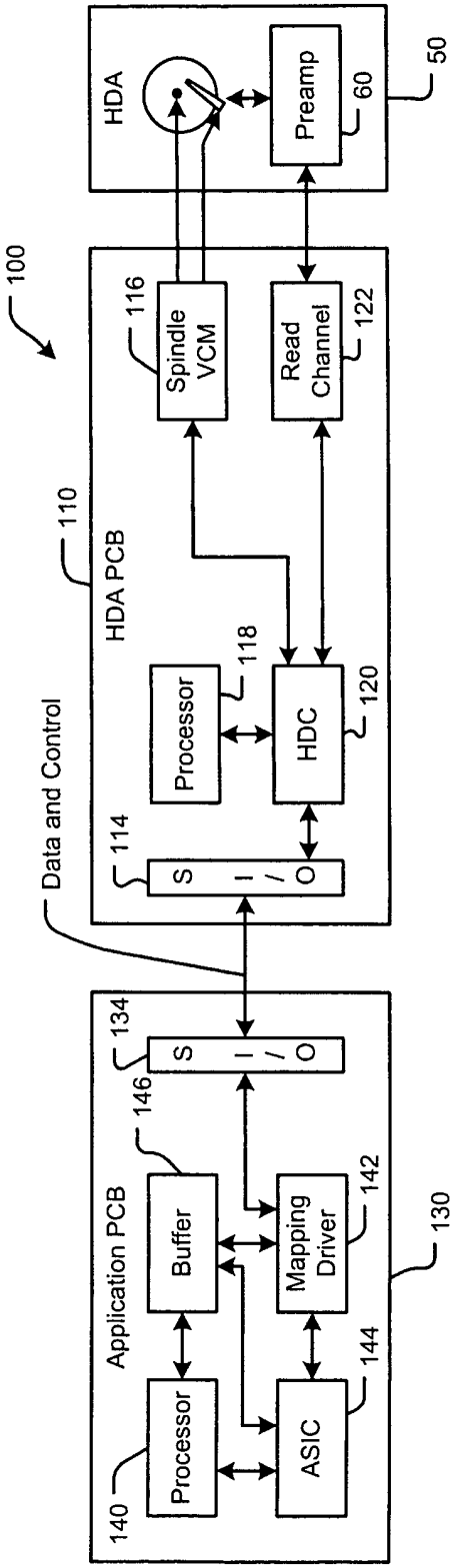

HDA
Preamp
60
50
100
116
Spindle VCM
Read Channel
122
110
HDA PCB
118
Processor
HDC
120
Data and Control
114
S / I / O
134
S / I / O
146
Application PCB
Buffer
Mapping Driver
142
130
144
Processor
ASIC
140

FIG. 3

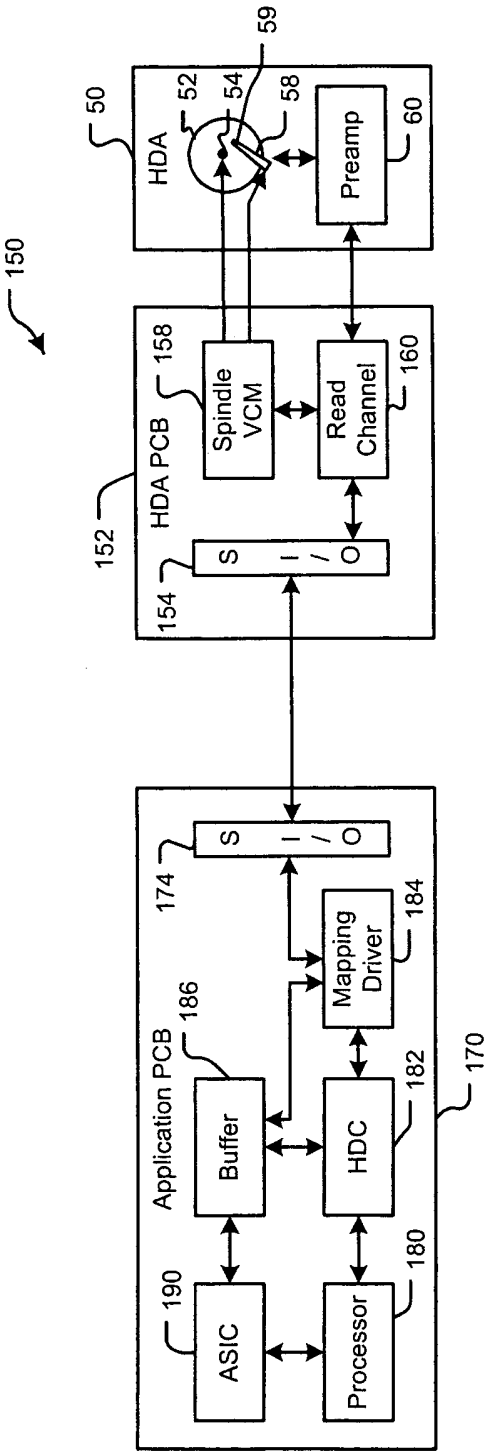

150
50
HDA
52
54
58
59
Preamp
60
152
HDA PCB
158
Spindle VCM
Read Channel
160
154
S
I
/
O
170
174
Application PCB
186
Buffer
Mapping Driver
184
HDC
182
190
ASIC
Processor
180

FIG. 4A

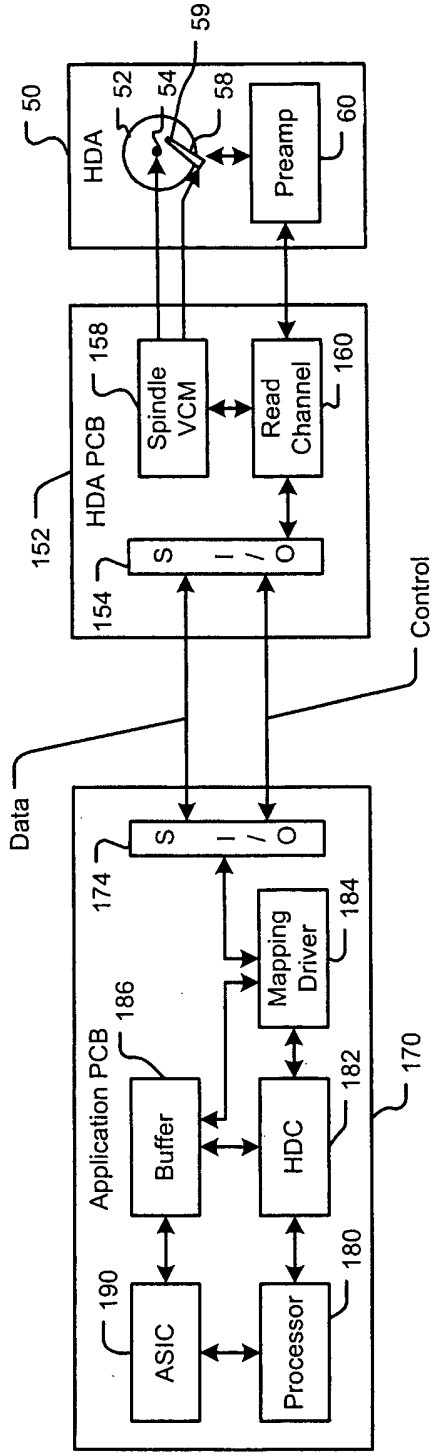

150
50
HDA
52
54
58
59
Preamp
60
152
HDA PCB
158
Spindle VCM
Read Channel
160
154
S
I
/
O
Control
Data
170
174
Application PCB
186
Buffer
Mapping Driver
184
HDC
182
190
ASIC
Processor
180

FIG. 4B

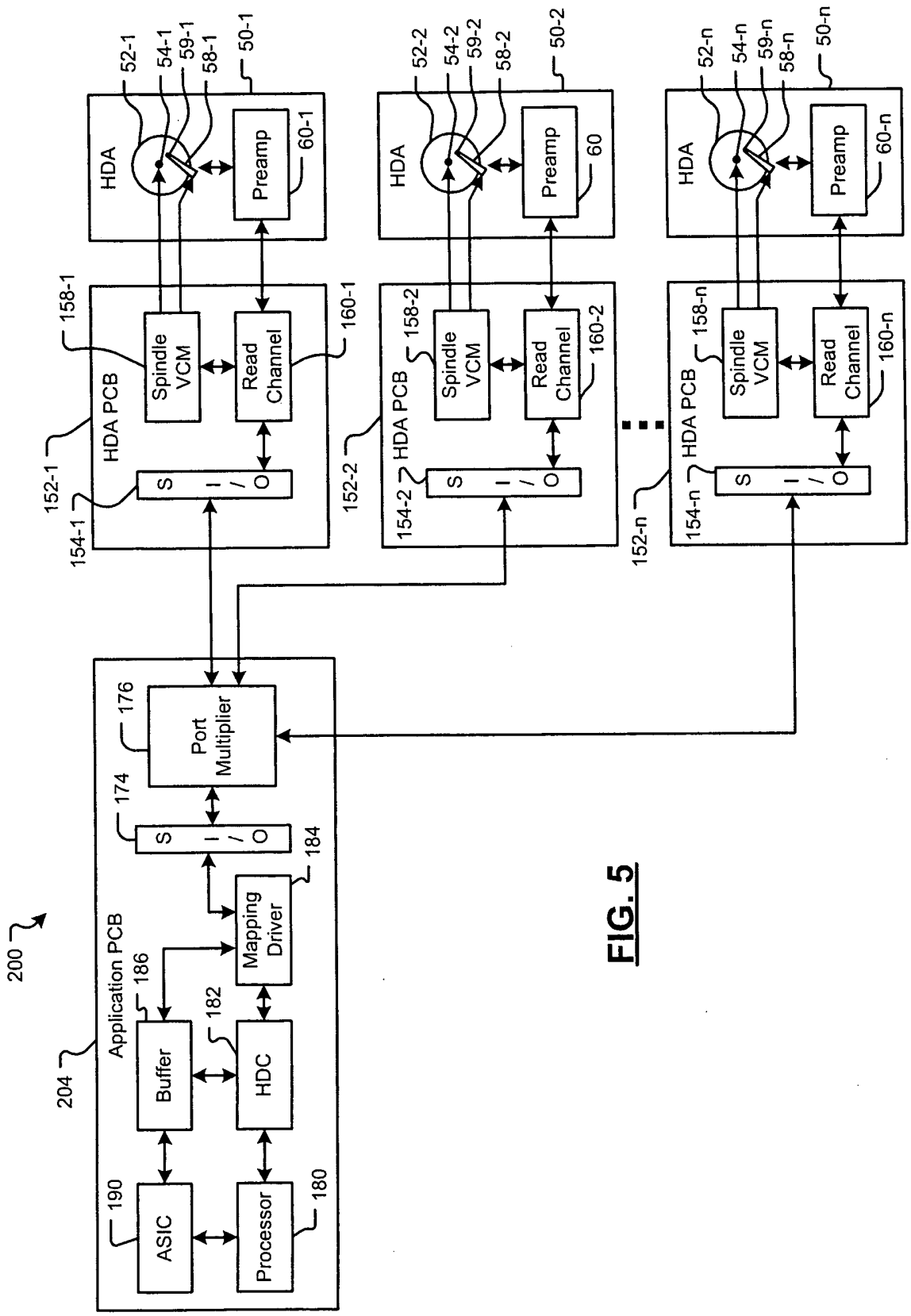

200
Application PCB
204
Buffer
186
HDC
182
ASIC
190
Processor
180
Mapping Driver
184
Port Multiplier
176
174
S
I
/
O
HDA
Preamp
60-1
60
60-n
52-1
54-1
59-1
58-1
50-1
52-2
54-2
59-2
58-2
50-2
52-n
54-n
59-n
58-n
50-n
HDA PCB
Spindle VCM
Read Channel
158-1
160-1
158-2
160-2
158-n
160-n
152-1
154-1
152-2
154-2
152-n
154-n

FIG. 5

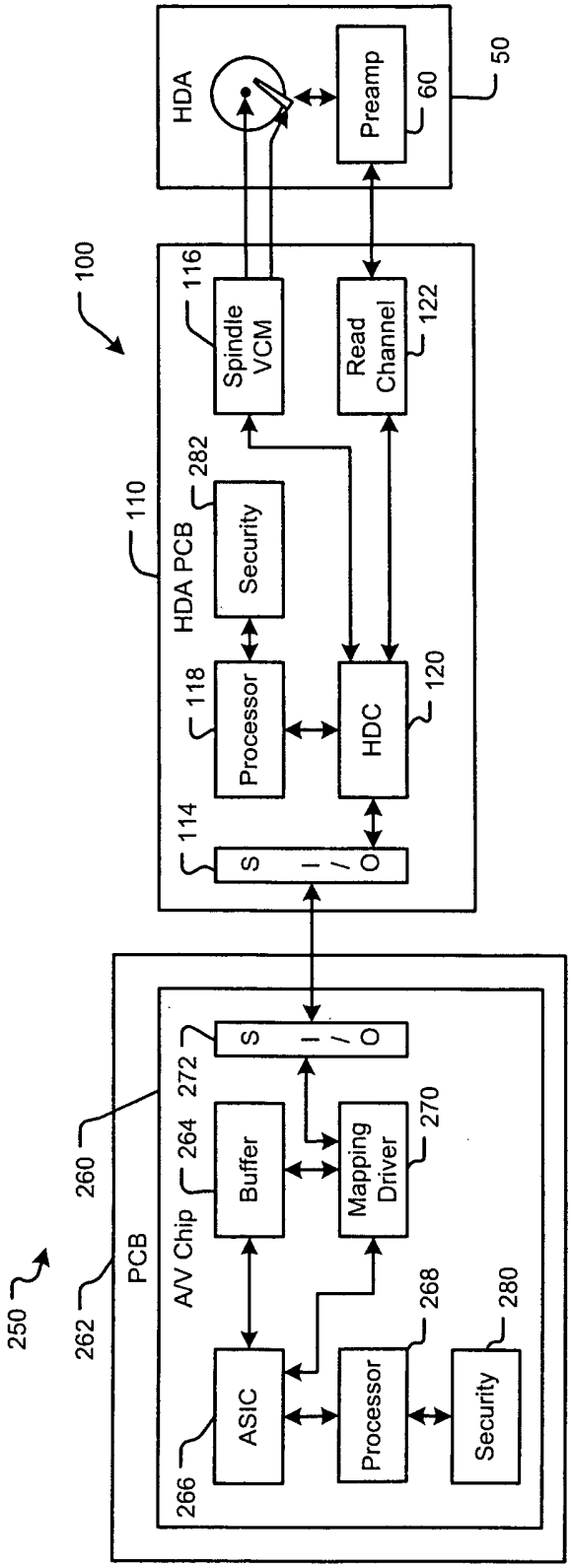

HDA
Preamp
60
50
100
116
Spindle VCM
Read Channel
122
282
Security
110
HDA PCB
118
Processor
HDC
120
114
S
I
/
O
250
262
PCB
260
272
A/V Chip
264
Buffer
Mapping Driver
270
268
280
ASIC
Processor
Security
266

FIG. 6

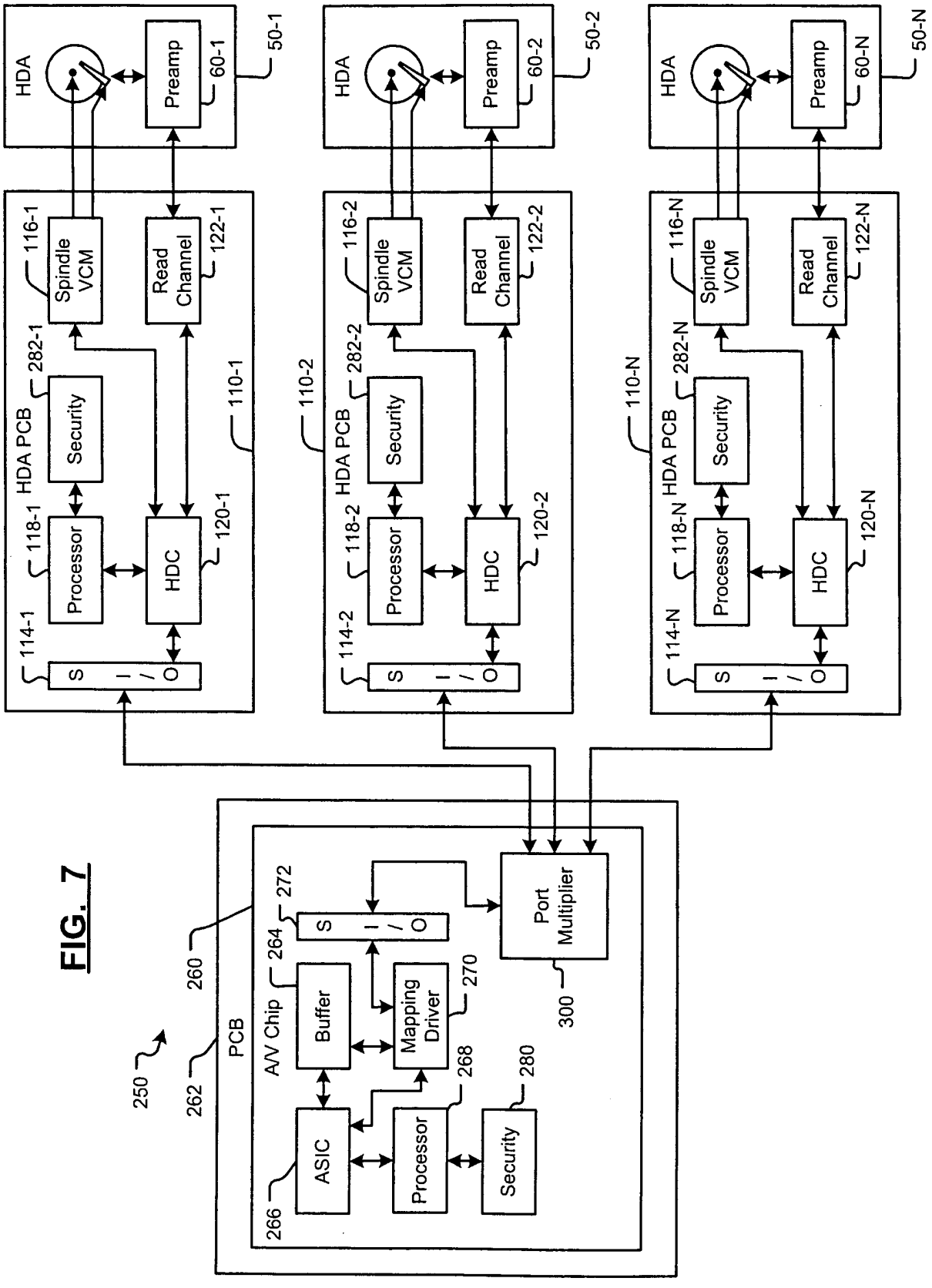

HDA
Preamp
60-1
50-1
60-2
50-2
60-N
50-N
Spindle VCM
116-1
116-2
116-N
Read Channel
122-1
122-2
122-N
HDA PCB
110-1
110-2
110-N
Security
282-1
282-2
282-N
Processor
118-1
118-2
118-N
HDC
120-1
120-2
120-N
S / I / O
114-1
114-2
114-N
Port Multiplier
300
PCB
262
250
260
A/V Chip
264
Buffer
Mapping Driver
270
272
ASIC
266
Processor
268
Security
280

FIG. 7

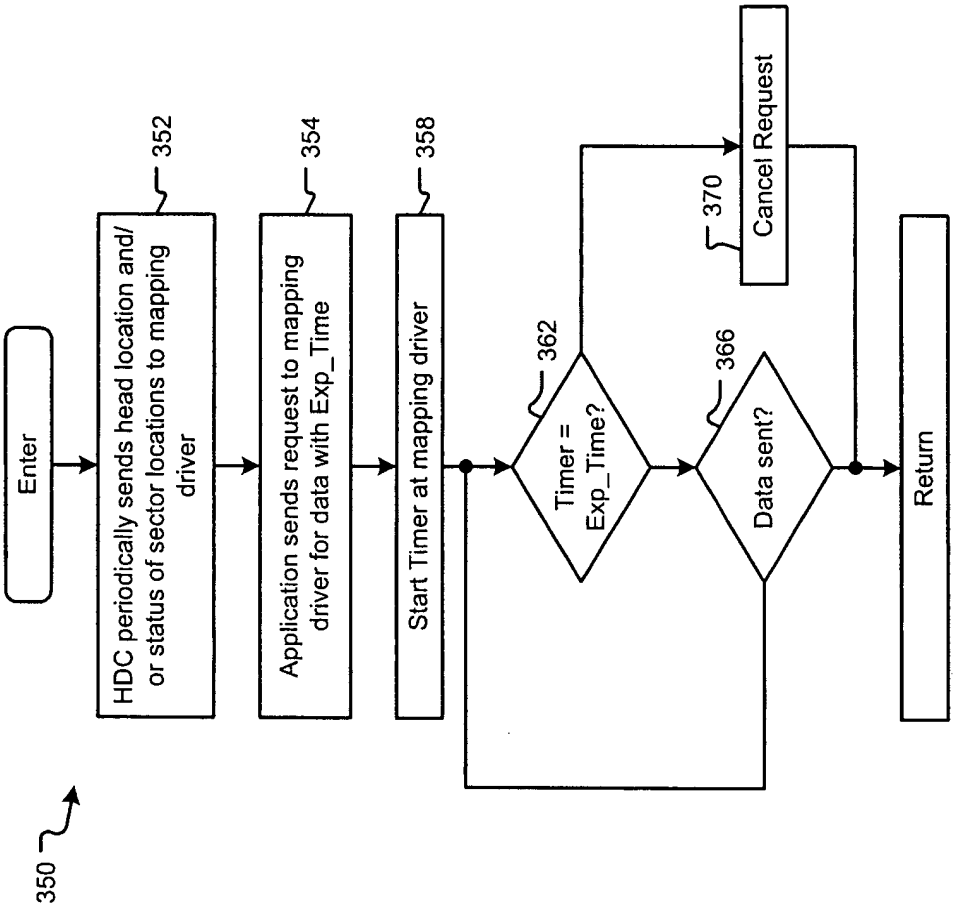

350
Enter
HDC periodically sends head location and/ or status of sector locations to mapping driver
352
Application sends request to mapping driver for data with Exp_Time
354
Start Timer at mapping driver
358
Timer = Exp_Time?
362
Data sent?
366
Cancel Request
370
Return

FIG. 9

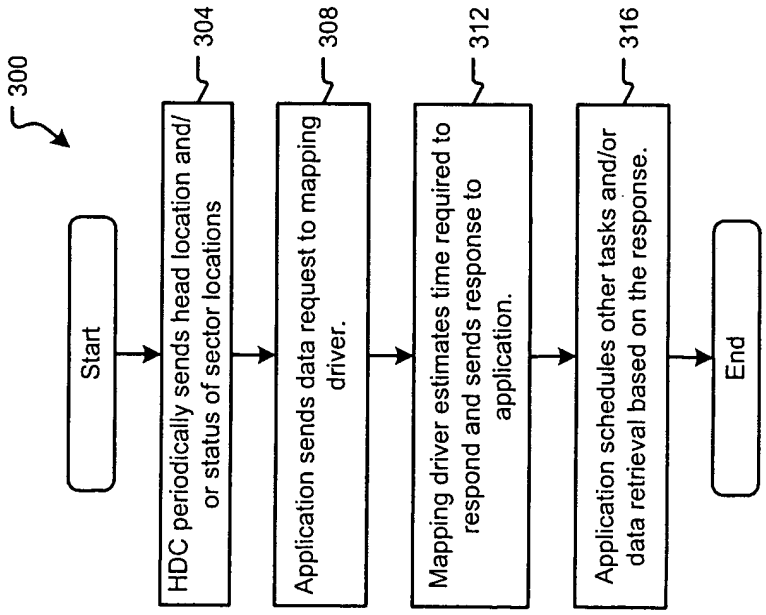

300
Start
HDC periodically sends head location and/ or status of sector locations
304
Application sends data request to mapping driver.
308
Mapping driver estimates time required to respond and sends response to application.
312
Application schedules other tasks and/or data retrieval based on the response.
316
End

FIG. 8

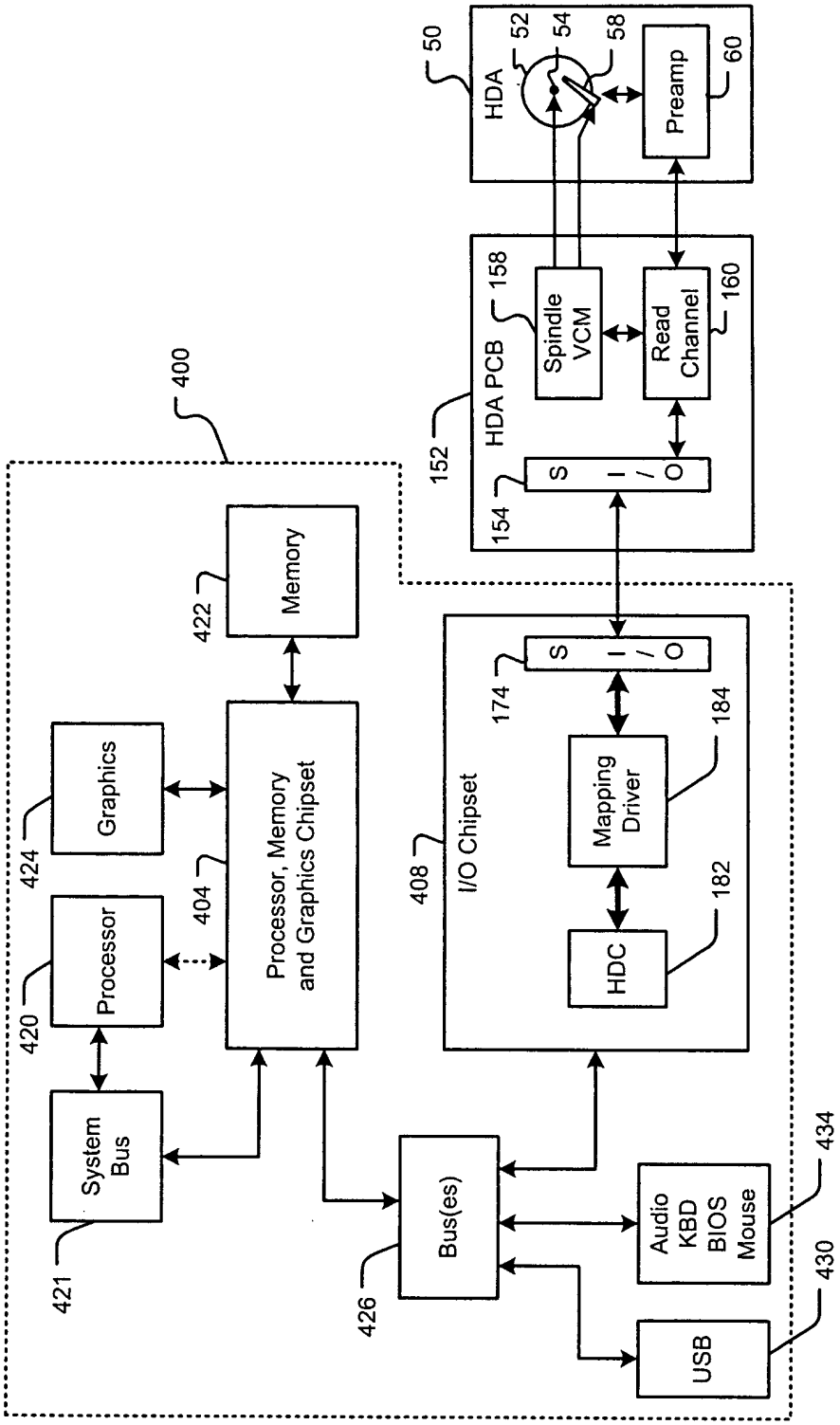

400
50
HDA
52
54
58
Preamp
60
158
Spindle VCM
Read Channel
160
HDA PCB
152
S I / O
154
422
Memory
174
S I / O
184
Mapping Driver
408
I/O Chipset
182
HDC
Graphics
424
404
Processor, Memory and Graphics Chipset
Processor
420
System Bus
421
426
Bus(es)
Audio KBD BIOS Mouse
434
USB
430

FIG. 10A

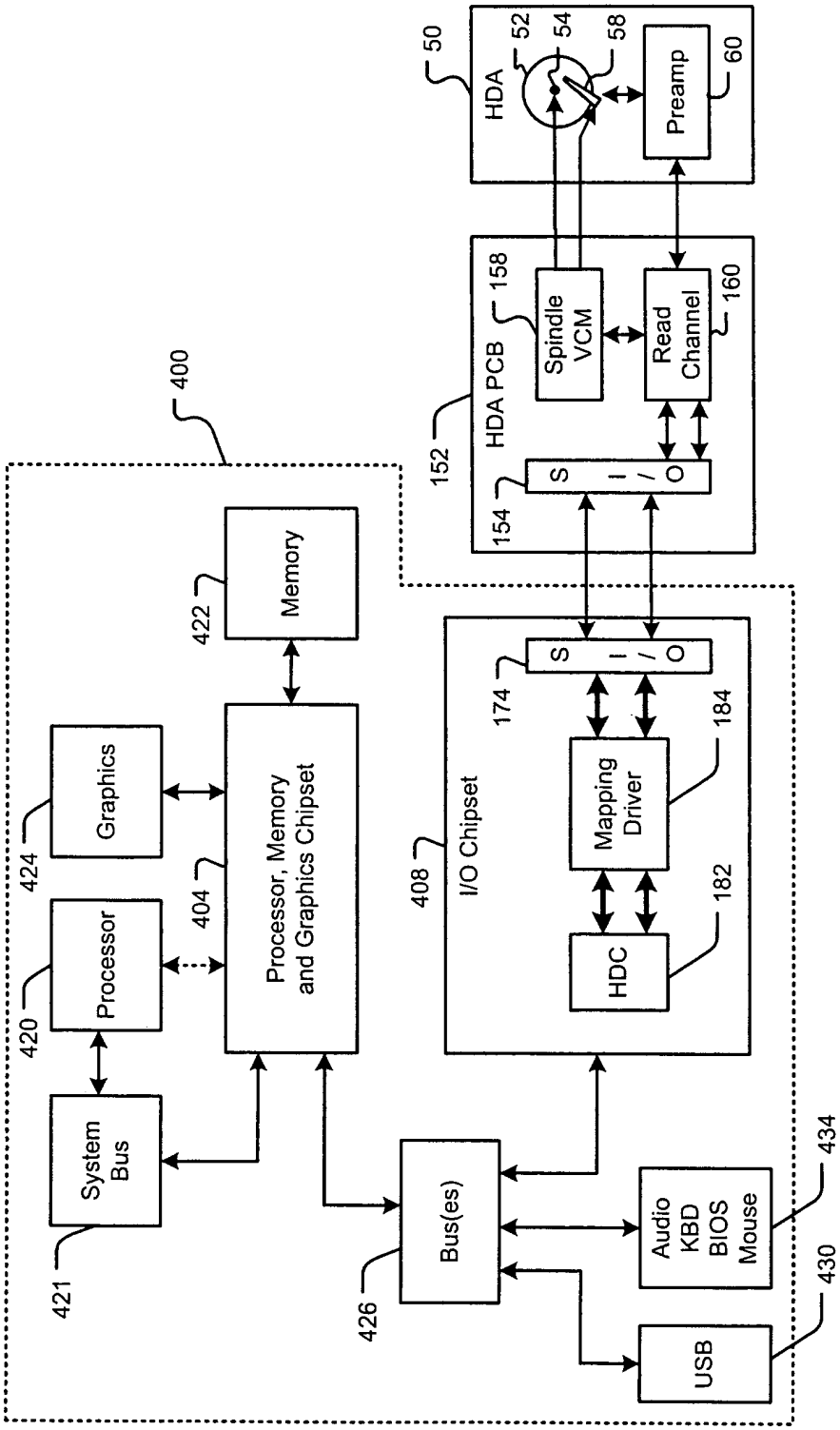

400
50
HDA
52
54
58
Preamp
60
158
Spindle VCM
Read Channel
160
HDA PCB
152
S
I/O
154
422
Memory
Graphics
424
Processor, Memory and Graphics Chipset
404
Processor
420
System Bus
421
408
I/O Chipset
174
184
Mapping Driver
182
HDC
426
Bus(es)
Audio KBD BIOS Mouse
434
USB
430

FIG. 10B

FIG. 11A

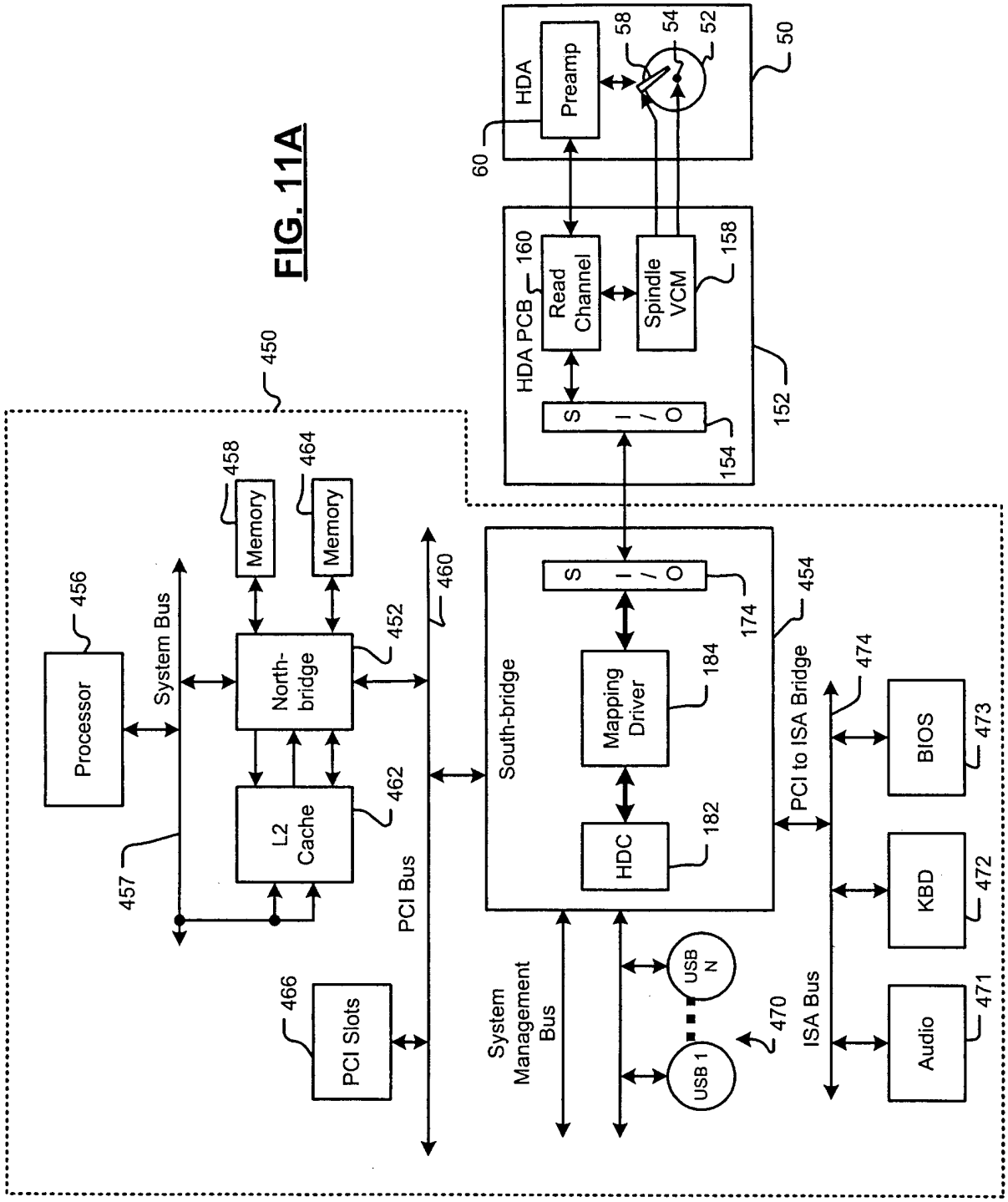

450
HDA
Preamp
58
54
52
50
60
HDA PCB
160
Read Channel
Spindle VCM
158
S I / O
154
152
458
464
Memory
Memory
456
System Bus
Processor
North-bridge
452
460
L2 Cache
462
457
PCI Bus
S I / O
174
454
South-bridge
Mapping Driver
184
HDC
182
PCI to ISA Bridge
474
BIOS
473
KBD
472
Audio
471
ISA Bus
470
USB N
USB 1
System Management Bus
466
PCI Slots

FIG. 11B

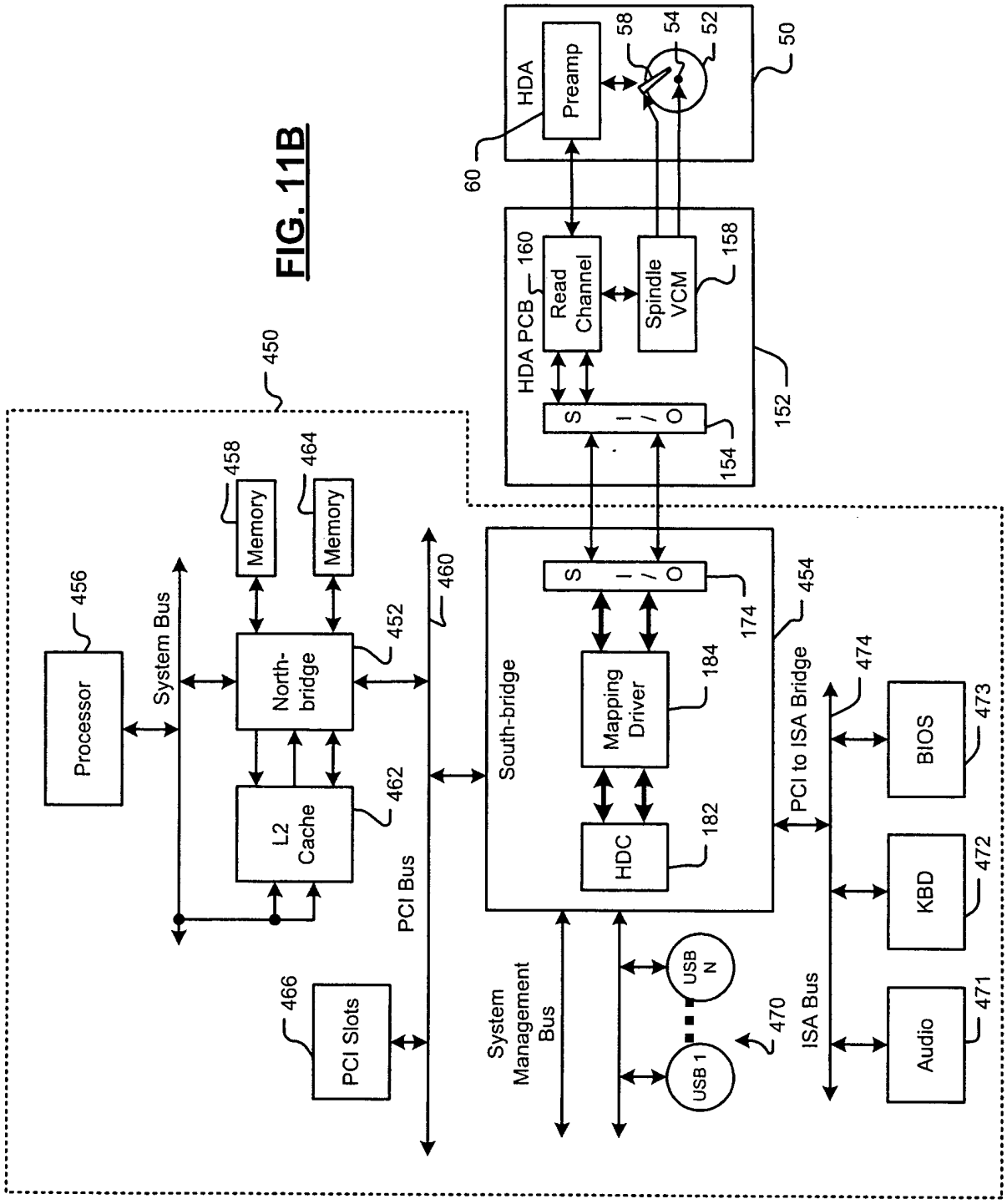

450
HDA
Preamp
58
54
52
50
60
HDA PCB
160
Read Channel
Spindle VCM
158
S
I / O
154
152
458
Memory
464
Memory
456
Processor
System Bus
North-bridge
452
460
L2 Cache
462
PCI Bus
South-bridge
S
I / O
174
454
Mapping Driver
184
HDC
182
PCI to ISA Bridge
474
BIOS
473
KBD
472
Audio
471
ISA Bus
470
USB N
USB 1
System Management Bus
466
PCI Slots

FIG. 12A

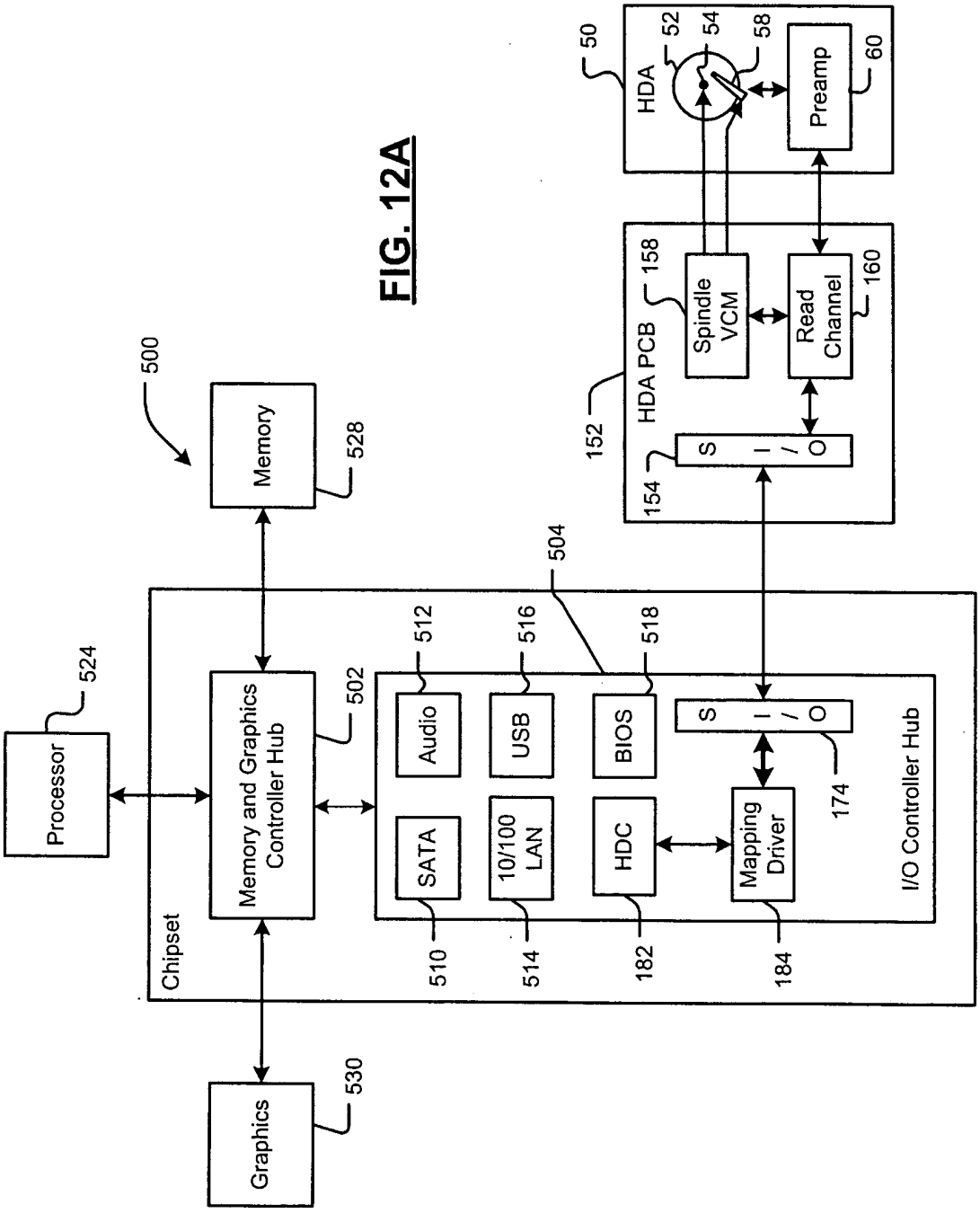
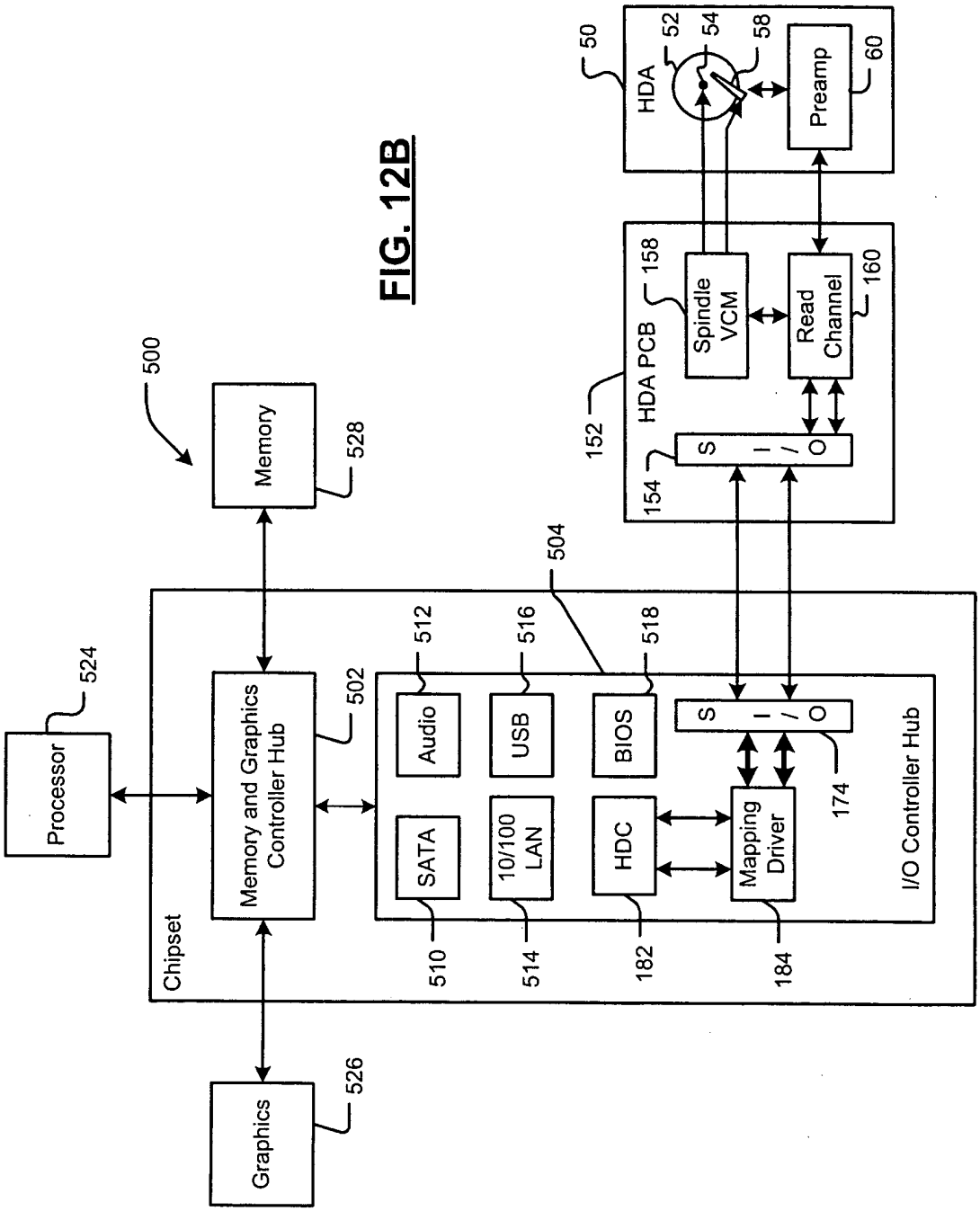

500
Memory
528
Processor
524
Chipset
Memory and Graphics Controller Hub
502
504
Audio
512
USB
516
BIOS
518
SATA
510
10/100 LAN
514
HDC
182
Mapping Driver
184
S
I
/
O
174
I/O Controller Hub
Graphics
530
HDA
50
52
54
58
Preamp
60
HDA PCB
152
Spindle VCM
158
Read Channel
160
154

FIG. 12B


500
Memory
528
Processor
524
Memory and Graphics Controller Hub
502
Chipset
Graphics
526
504
512
516
518
Audio
USB
BIOS
SATA
10/100 LAN
HDC
Mapping Driver
S
I
/
O
I/O Controller Hub
174
510
514
182
184
50
HDA
52
54
58
Preamp
60
HDA PCB
152
158
Spindle VCM
Read Channel
160
154

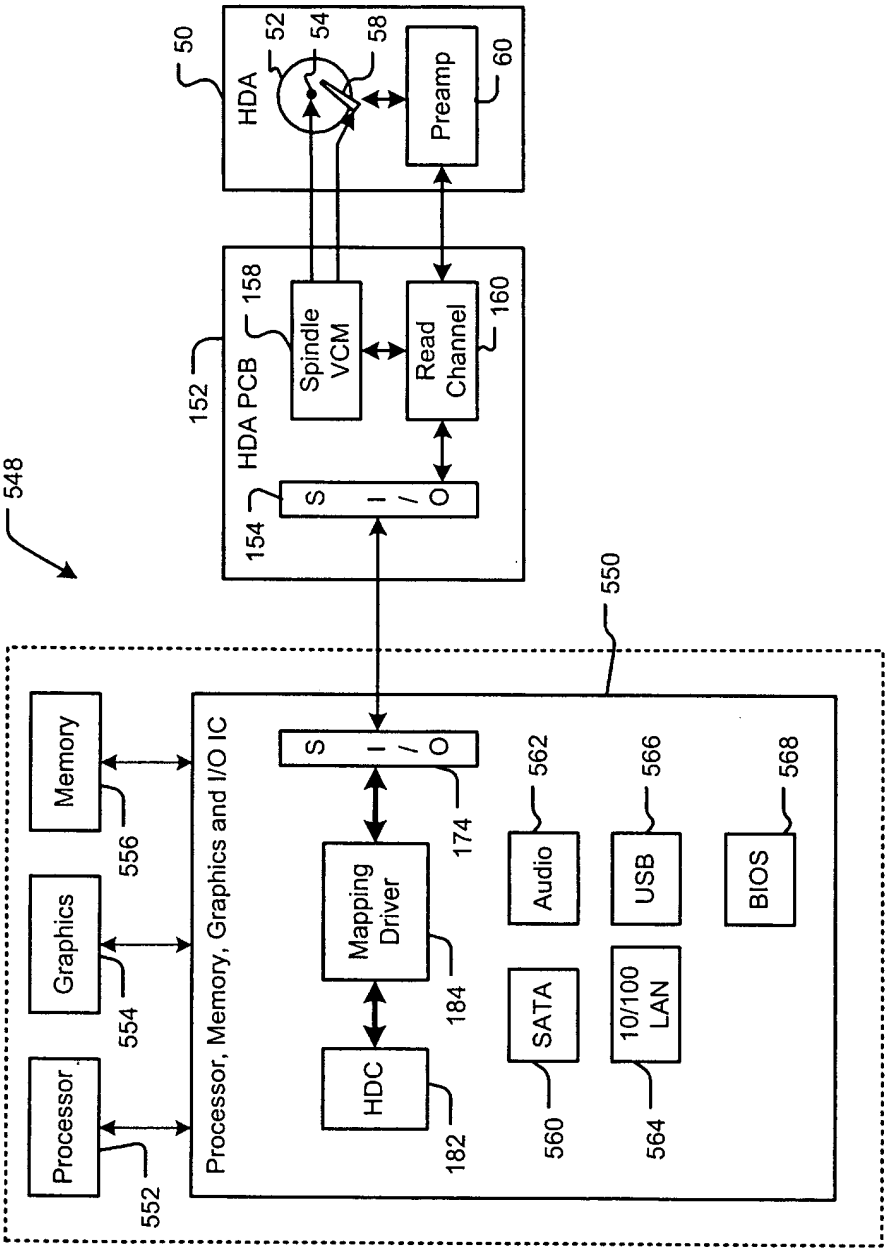

548
50
HDA
52
54
58
Preamp
60
152
HDA PCB
158
Spindle VCM
Read Channel
160
154
S
I
/
O
550
Memory
556
Graphics
554
Processor
552
Processor, Memory, Graphics and I/O IC
S
I
/
O
174
Mapping Driver
184
HDC
182
562
Audio
SATA
560
566
USB
10/100 LAN
564
568
BIOS

FIG. 13A

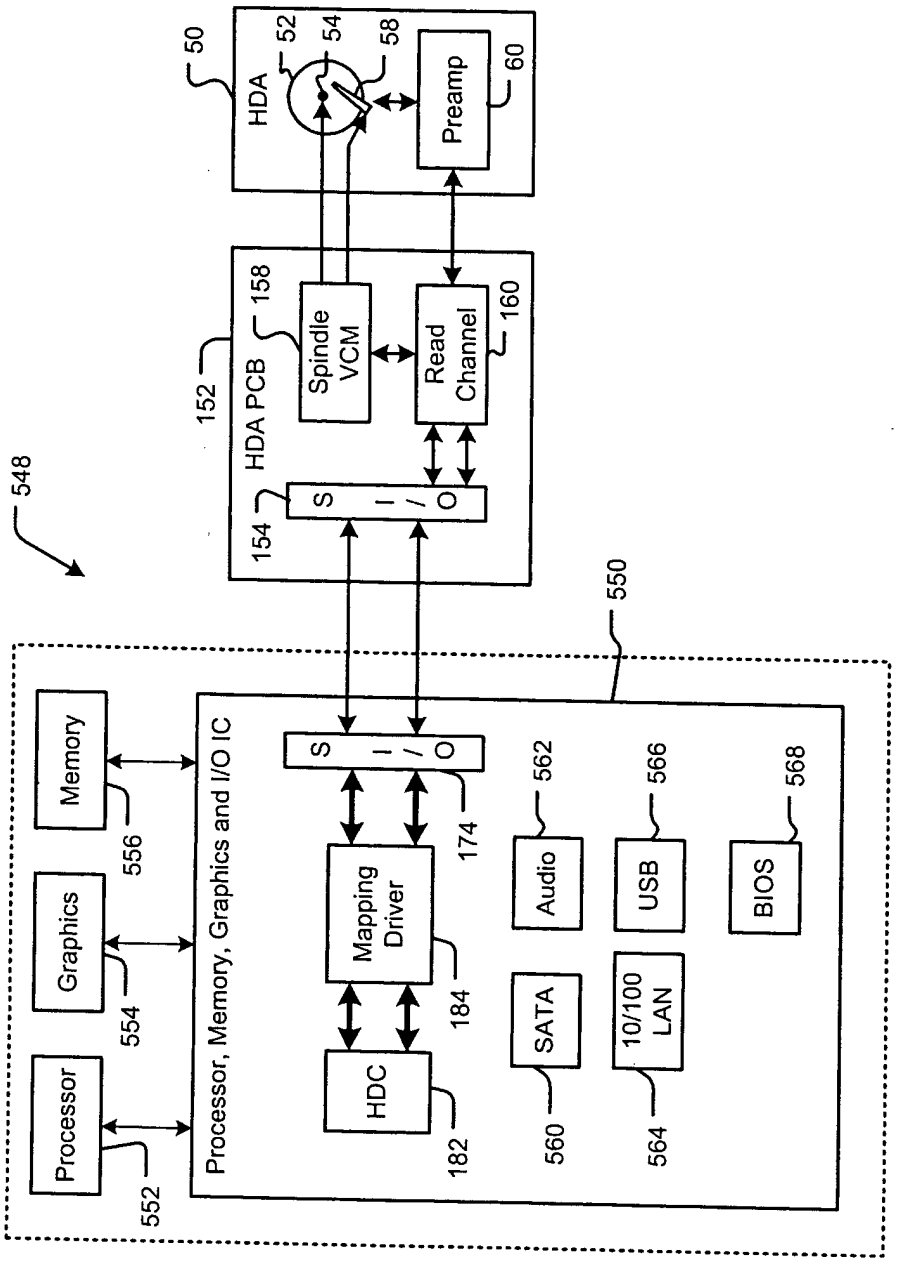

548
50
HDA
52
54
58
Preamp
60
152
HDA PCB
158
Spindle VCM
Read Channel
160
154
S
I
/
O
550
Memory
556
Graphics
554
Processor
552
Processor, Memory, Graphics and I/O IC
S
I
/
O
174
Mapping Driver
184
HDC
182
562
Audio
SATA
560
566
USB
10/100 LAN
564
568
BIOS

FIG. 13B